

# PATENT ABSTRACTS OF JAPAN

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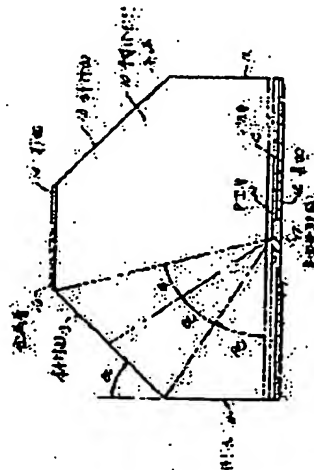
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## (54) LIGHT-EMITTING DIODE AND ITS MANUFACTURING METHOD

(57)Abstract:

**PURPOSE:** To improve the efficiency for taking out light from a LED by enabling a transparent semiconductor body between the junction part at a backside and an electrical connection part at a front side to be in the shape of a polygonal base part, where a pyramid whose tip part is cut off is placed.

**CONSTITUTION:** In a transparent LED that is formed by a semiconductor material body 10 with a flat reverse side 12, a plurality of side surfaces 11 are extended vertically toward the backside 12. A plurality of inclined surfaces 13 with the same number as that of the side surfaces 11 are mounted on the inclined surfaces 13. The tip of the resultant pyramid is cut off by a front surface 14 that is in parallel with the reverse side 11. An electrical contact part is created at the backside 12 and the front side 14, thus discharging light from a pn-junction part in a semiconductor body 10. This kind of LED basically has twelve escape cones and an internally reflected light that did not escape the first time enters an escape cone with a high probability due to reflection, thus improving a take-out efficiency by two fold being larger than that of a conventional LED.



## LEGAL STATUS

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